REMARKS

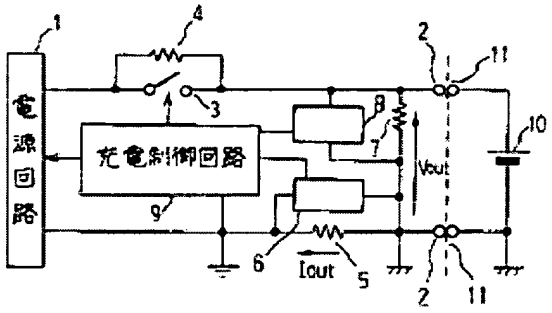
Claims 1-12 are pending in this application. By the present Amendment, claims 1 and 3 have been amended to clarify the claimed subject matter. Claims 1-12 remain pending upon entry of this Amendment, with claim 1 being the sole pending claim in independent form.

Claims 1-12 were rejected under 35 U.S.C. §103(a) as purportedly unpatentable over Masuda (JP 10-225001) in view of U.S. Patent No. 5,825,155 to Ito et al.

Applicant respectfully submits that the present application is allowable over the cited art, for at least the reason that the cited art does not disclose or suggest the aspects of the present application that ***when it is determined that the current flowing through the secondary battery is higher than a predetermined value*** from the operation state of the constant current circuit, the determination circuit determines that the secondary battery is operable and the secondary battery is reliably connected to the connection terminal T1.

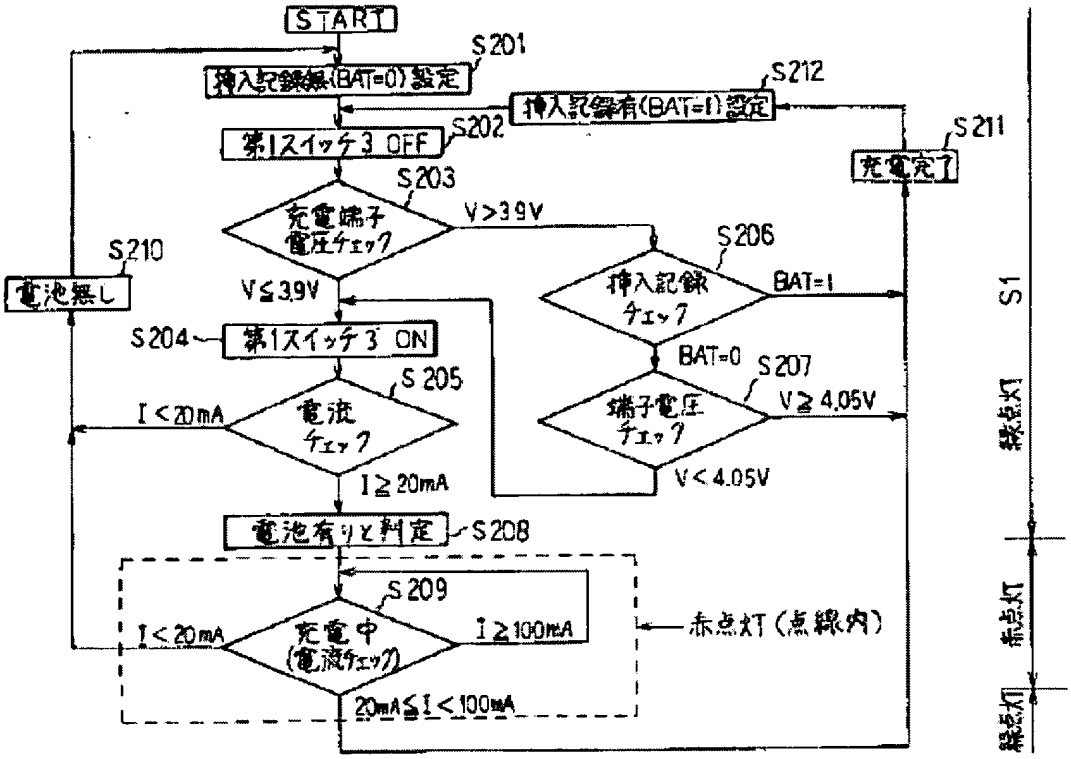
Masuda, as understood by applicant, proposes a circuit, as shown in figure 1 (reproduced below), for detecting whether a battery (10) is connected by finding out a connecting condition of the battery based on the voltage appearing at a charging terminal (2) during the cyclic on/off operation of a switch (3) connected between the charging terminal and a power circuit (1).

【図1】



A flow chart of the detecting operation of the circuit of Masuda is shown in figure 2 (reproduced below).

【図2】



The circuit of Masuda maintains an insertion record (or count BAT) of the battery 10, and the count BAT is initially set to 0 (step S201). When the power is turned on, the switch 3 is turned off (step S202) and on (step S204) in a constant cycle by a charge controlling circuit 9, and during such period, the voltage Vout across a voltage detecting resistor 7 connected to the charging terminal 2 is detected by a voltage detecting circuit 8 (step S203) and the current Iout in a charging current detecting resistor 5 is detected by a charging current detecting circuit 6 (step S205). The charging current detecting circuit 6 detects the voltage at each end of the charging current detecting resistor 5, and calculates the current across the charging current detecting

resistor 5 based on the combination of (i) the resistance of the charging current detecting resistor 5 and (ii) the potential drop across the charging current detecting resistor 5.

The combination of the power circuit 1 and the switch 3 is equated in the Office Action to a constant current circuit.

However, it is determined in Masuda that the battery 10 is connected to the charger based on (a) the voltage Vout across the voltage detecting resistor 7 connected across the charging terminal 2 and (b) the potential drop across (and thus current flowing through) the charging current detecting resistor 5.

On the other hand, the circuit proposed in Masuda does ***NOT*** determine the current flowing through the secondary battery, much less determining such current flowing through the secondary battery from the operation state of the power circuit 1 and the switch 3.

Further, the circuit proposed in Masuda does ***NOT*** determine that the secondary battery is operable and the secondary battery is reliably connected to the connection terminal T1 when such current ***(flowing through the secondary battery)*** is higher than a predetermined value.

Instead, as pointed out above, Masuda merely proposes monitoring a current flowing through the charging current detecting resistor 5.

Since the circuit of Masuda determines that the battery 10 is connected to the charger based on (a) the voltage Vout across the voltage detecting resistor 7 connected across the charging terminal 2 and (b) the potential across the charging current detecting resistor 5, it is susceptible to erroneous determination when high frequency noise is superposed (like the conventional circuit referenced in the paragraph bridging pages 4 and 5 of the present application).

Ito, as understood by applicant, proposes a circuit, as shown in Fig. 38 (reproduced below), for controlling charge and/or discharge of a battery.

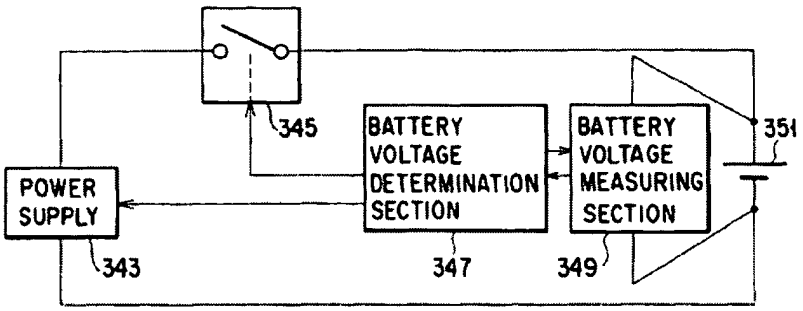


FIG. 38

Such circuit shown in Fig. 38 of Ito includes a battery voltage measuring section 349 for measuring a battery voltage, a battery voltage determination section 347 for determining whether the battery voltage reaches a target value and a charge ON/OFF controller 345 for turning ON/OFF the charge operation, based on the battery voltage.

However, Ito, like Masuda, does NOT disclose or suggest the aspects of the present application that ***when it is determined that the current flowing through the secondary battery is higher than a predetermined value*** from the operation state of the constant current circuit, the determination circuit determines that the secondary battery is operable and the secondary battery is reliably connected to the connection terminal T1.

Applicant submits that the cited art, even when considered along with common sense and common knowledge to one skilled in the art, does ***NOT*** render unpatentable the above-mentioned aspects of the present application.

Accordingly, applicant respectfully submits that independent claim 1 and the claims

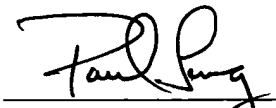
depending therefrom are allowable over the cited art.

In view of the remarks hereinabove, applicant submits that the application is allowable. Accordingly, applicant earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such petition. The Patent Office is hereby authorized to charge any required fees, and to credit any overpayment, to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,



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